WHAT IS CLAIMED IS:

1. A speech recognition apparatus comprising:

an acoustic processing section for converting an input speech signal given as a
time-series signal into a feature vector and outputting a plurality of dissected frames;

a word model producing section for producing at least one word model based
on a recognition object word prepared beforehand and an acoustic model;

a matching processing section for performing matching processing for collating
said at least one word model with said feature vector for each word by using a Viterbi
algorithm which obtains a final cumulative probability along a state sequence giving a
maximum probability; and

a maximum value memorizing section for memorizing a maximum value in
each frame of a score calculated based on the probability for a plurality of states
contained in said plurality of frames, wherein

said matching processing section selects a calculation object state in which a
score is to be calculated from said plurality of states based on the maximum value of the
score and performs thinning-out processing for omitting calculation of scores for the
states not selected as said calculation object state.

2. The speech recognition apparatus in accordance with claim 1, wherein

said matching processing is a matching processing using a hidden Markov
model, applied to said plurality of states disposed in a matrix pattern, which obtains said
cumulative score as matching result by specifying a path giving a maximum cumulative
score among a plurality of paths selectable for reaching a final state while accumulating
said scores of the states, and

said thinning-out processing performed in said matching processing section, during said matching processing, includes the processing of designating a present state currently serving as judgment object of score calculation as said calculation object state when a score of a previous state passing immediately before reaching said present state is

5    within a predetermined range being set based on said maximum value of the score memorized in said maximum value memorizing section, and also includes the processing of omitting calculation of score for said present state when the score of said previous state is outside said predetermined range.

10    3. The speech recognition apparatus in accordance with claim 2, wherein said matching processing section further includes a function of comparing said maximum value of the score memorized in said maximum value memorizing section with a latest score of each state obtained through said matching processing and renewing said maximum value of the score memorized in said maximum value memorizing section by

15    the latest score when said latest score exceeds said maximum value of the score.

4. The speech recognition apparatus in accordance with claim 2, wherein

said at least one word model includes a plurality of word models,

said speech recognition apparatus further comprises a matching result judging

20    section which receives information relating to said matching result from said matching processing section and compares said matching result of a latest word model having been received most recently with said matching result of other word model having been already received to judge best matching result, and

said matching processing comprises

25    a function of obtaining the maximum value of a latest score in each state of

each frame obtained through said matching processing and storing said obtained maximum value in a predetermined temporary memorizing section for each frame, and

a function of receiving information relating to judgment result from said matching result judging section and renewing said maximum value of the latest score

5     memorized in said maximum value memorizing section by the maximum value of each state of each frame memorized in said temporary memorizing section when said matching result of said latest word model is said best matching result.

5. The speech recognition apparatus in accordance with claim 2, wherein

10     said at least one word model includes a plurality of word models,

said word model producing section has a function of classifying said plurality of word models into a plurality of word model assemblies based on a predetermined common term and outputting the classified word model assemblies, and

said speech recognition apparatus further includes a matching object word

15     selecting section for receiving said plurality of word model assemblies and selecting a representative model from each word model assembly to be sent to said matching processing section, and reflecting matching result of said representative model to a decision as to whether or not said matching processing should be applied to the word models remaining in said each word model assembly.

20

6. The speech recognition apparatus in accordance with claim 5, wherein said predetermined common term used in classifying the word models by said word model producing section is similarity with respect to two or more predetermined number of leading phonemes appearing from the head of said recognition object word.

25

7. The speech recognition apparatus in accordance with claim 5, wherein said predetermined common term used in classifying the word models by said word model producing section is word length of said recognition object word.

5          8. The speech recognition apparatus in accordance with claim 5, wherein said predetermined common term used in classifying the word models by said word model producing section is number of times with respect to silent sound or low power of said recognition object word obtainable from information relating to variation of power.

10          9. The speech recognition apparatus in accordance with claim 5, wherein

said speech recognition apparatus further comprises

a matching result judging section which receives information relating to said matching result from said matching processing section and compares said matching result of a latest word model having been received most recently with said matching result of

15    other word model having been already received, and then outputs a word model showing best matching result as word data corresponding to input word, and

said word model producing section has a function of receiving said word data from said matching result judging section to perform statistical processing, and then giving a priority to a frequently output word model so that said frequently output word

20    model can be selected by said matching object word selecting section at a higher probability.

10. The speech recognition apparatus in accordance with claim 5, wherein

said speech recognition apparatus further comprises

25          a matching result judging section which receives information relating to said

matching result from said matching processing section and compares said matching result of a latest word model having been received most recently with said matching result of other word model having been already received, and then outputs a word model showing best matching result as word data corresponding to input word, and

5        a model dictionary section which temporarily stores data of said word model produced from said word model producing section, and further

said matching object word selecting section has a function of receiving said word data from said matching result judging section to perform statistical processing, and then rearranging the data of said word model stored in said model dictionary section so

10    that a frequently output word model can be selected at a higher probability.